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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,794	04/12/2001	Toru Fujihira	Q64074	1436

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SUGHRUE, MION
ZINN, MACPEAK & SEAS
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EXAMINER

ROSSI, JESSICA

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 02/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/832,794

Applicant(s)

FUJIHIRA, TORU

Examiner

Jessica L. Rossi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/4/03, Amendment.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-6 and 8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-6 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Amendment

1. This action is in response to the amendment dated 12/4/03. Claims 2-3 and 7 were canceled. Claims 1, 4-6, and 8 are pending.
2. The rejection of claims 1, 4, and 6 under 35 U.S.C. 103(a) as being unpatentable over Dean et al. (of record) in view of Forster et al. (of record) and Sato et al. (of record), or alternatively, Sato in view of Dean, as set forth in paragraph 7 of the previous office action dated 8/5/03 has been withdrawn. ***Please note that this rejection has been overcome by Applicant's assertion of common ownership as set forth in the 3rd paragraph on p. 5 of the remarks filed 12/4/03.***
3. The rejection of claims 1 and 4-6 under 35 U.S.C. 103(a) as being unpatentable over Dean et al., Forster et al., Sato et al., or alternatively, Sato and Dean and further in view of Wilden (of record), as set forth in paragraph 9 of the previous office action, has been withdrawn for the reason given in paragraph 2 above.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 5, it recites the limitation "said preformed members" in line 4. There is insufficient antecedent basis for this limitation in the claim. It is suggested to amend the claim to

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state --one or more preformed stringer members-- in lines 3-4, --said one or more preformed stringer members-- in line 7, and --said one or more stringer members-- in line 8.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lucas et al. (US 2003/0190452) in view of Dean et al. (WO 99/39976; of record), or alternatively, Dean et al. in view of Lucas et al.

**It is noted the present invention is directed to preventing slippage of the inner and outer skin layers located on and extending beyond opposing sides of a honeycomb core during heating and pressing of the skins and core, thereby allowing for pressing at high pressures ranging from 6-7 kg/cm² without crushing the core.*

With respect to claim 8, Lucas is directed to a method for producing a composite structure that may be used in the **aircraft industry** (sections [0001-0002]). The composite structure comprises inner and outer skins 14, 12 located on and extending beyond opposing sides of a honeycomb core 10 (Figure 3). The reference is concerned with preventing core crushing by preventing slippage of the skins during heating and pressing to consolidate the skins and core (section [0004]; section [0023]). The reference prevents this slippage by treating **one** or both of the skins to increase its **stiffness** and thereby increase its frictional resistance (sections [0027-0028]; section [0029]; section [0071-0072]).

The reference teaches making the composite structure by placing an outer skin 12 made of a composite prepreg on a forming die 16 (Figure 3; section [0115-0116]), mounting the

honeycomb core 10 on a portion of the outer skin (Figure 3; section [0155]), superimposing the inner skin 14 made of a composite prepreg thereon to prepare an assembly (Figure 3), wherein the skins extend beyond the core to contact each other and form an edge band (Figure 3; section [0027]), and forming the assembly by heating under a pressure of 6 kg/cm² to cure and consolidate the same (note 85 psi = 6 kg/cm²; sections [0142-0143]; section [0146-0147]).

The reference is silent as to the composite structure having a three-dimensionally curved portion and a cylindrical portion, forming these portions at the same time, the honeycomb core being on a portion of the outer skin that forms the three-dimensionally curved portion, arranging a preformed frame member and a preformed stringer member each made of a composite prepreg on a portion of the inner skin that forms the cylindrical portion, and the pressure being greater than 6 kg/cm² but less than or equal to 7 kg/cm².

Dean teaches a method for producing a composite structure 18/62 that may be used in the **aircraft industry** (Figures 12 and 27; p. 5, line 22). Dean teaches the structure having a 3-D curved portion and a cylindrical portion (Figure 27). The method comprises placing an outer skin 41 made of a composite prepreg on a forming die (p. 17, lines 20-21; p. 18, lines 23-24; p. 16, lines 15-17), mounting a honeycomb core 50 on a portion of the outer skin that forms the 3-D curved portion (Figures 12 and 27; p. 17, lines 23-24; p. 19, lines 19-20), superimposing an inner skin (not shown in Figures) also made of a composite prepreg but being **more rigid** than the outer skin onto the honeycomb core (p. 3, lines 17-20; p. 12, lines 29-30), wherein the skins extend beyond the core to contact each other (p. 17, lines 24-29), arranging preformed stiffener members 42-45 (Figure 12) or 42, 54 (Figure 27) each made of a composite prepreg on a portion of the inner skin that forms the cylindrical portion to prepare an assembly (Figures 12 and 27; p.

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17, lines 34-35; p. 19, lines 10-11 and 14-17; p. 21, lines 3 and 7 and 11-13), and forming the assembly by **simultaneously curing the curved and cylindrical portions** forming the structure (p. 17, lines 17-18; p. 19, lines 32-34; p. 21, lines 32-35).

One skilled in the art would have readily appreciated that "stiffeners" is a notoriously well-known and conventional term in the art that encompasses such things as stringers, ribs, spars, and frame members; all of which are used to strengthen a composite panel in the aircraft industry. Therefore, selection of particular "stiffeners" would have been within purview of the skilled artisan at the time the invention was made depending on the final use of the panel; it being noted that the stiffeners of Dean cross/intersect (Figure 27; column 22, lines 11-13) just as those of the present invention (Figure 4).

Furthermore, since Lucas is not limited to a particular configuration for the composite structure and both Lucas and Dean teach their composite structures being used in the aircraft industry, it would have been obvious to the skilled artisan at the time the invention was made to have the composite structure of Lucas comprise a three-dimensionally curved portion and a cylindrical portion that are made at the same time, with the honeycomb core of Lucas being on a portion of the outer skin that forms the three-dimensionally curved portion, and arrange a preformed frame member and a preformed stringer member each made of a composite prepreg on a portion of the inner skin of Lucas that forms the cylindrical portion because such is known in the art, as taught by Dean, wherein such a configuration can be incorporated into the body of an aircraft for imparting excellent strength and attenuation properties thereto.

As for the remainder of Applicant's claimed pressure range, the skilled artisan reading Lucas as a whole would have appreciated that the reference does not restrict itself to a specific

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pressure range (section [0147]). Therefore, since Lucas's teaching of 85 psi (= 6 kg/cm²) is so close to the remainder of Applicant's claimed range (greater than 6 but less than or equal to 7 kg/cm²), the skilled artisan would have been motivated to use such pressures to achieve even greater consolidation of the layers.

Alternatively, since Dean teaches the inner skin being more rigid than the outer skin, it would have been obvious to the skilled artisan at the time the invention was made to use a stiffness-treated prepreg for the inner skin of Dean because such is known in the art, as taught by Lucas, and such a treated prepreg has increased frictional resistance that allows for curing of the composite structure by heating under a pressure of 6 kg/cm² without crushing the core, wherein curing at such a high pressure allows for greater consolidation of the layers (Lucas, section [0146]).

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lucas et al. in view of Dean et al., or alternatively, Dean et al. in view of Lucas et al. and further in view of Wilden (US 5242523; of record).

With respect to claim 8, it is noted the examiner interpreted the "stiffeners" of Dean to encompass frames and stringers, which are well-known and conventional in the art as set forth in the 103 rejection above. If it is not taken as such, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use composite prepreg frames and stringers for the stiffeners of Dean because such are known in the art for reinforcing a composite aircraft panel, as taught by Wilden (Figure 3; column 1, lines 21-22 and 52-55; column 4, lines 49-51 and 61-65; column 7, lines 30-33; column 10, lines 1-5), where only the expected results would have been achieved.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1, 4, 6, and 8 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of U.S. Patent No. 6,551,441 in view of Dean et al.

With respect to claims 1, 4, and 8, US '441 teaches all the limitations except the panel having a 3D curved portion and a cylindrical portion wherein the honeycomb is mounted on a portion of the outer skin that forms the 3D portion and arranging a preformed frame member and stringer member each made of prepreg on a portion of the inner skin that forms the cylindrical portion.

It would have been obvious to the skilled artisan at the time the invention was made to have the composite structure of US '441 comprise a three-dimensionally curved portion and a cylindrical portion (that are made at the same time – limitation only in claim 8), with the honeycomb core being on a portion of the outer skin that forms the three-dimensionally curved portion, and arrange a preformed frame member and a preformed stringer member each made of a composite prepreg on a portion of the inner skin that forms the cylindrical portion because such

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is known in the art, as taught by Dean (see paragraph 7 above for complete discussion), wherein such a configuration can be incorporated into the body of an aircraft for imparting excellent strength and attenuation properties thereto.

Regarding claim 6, Dean teaches the structure being part of an aircraft body.

11. Claim 5 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of U.S. Patent No. 6,551,441 in view of Dean et al. and further in view of Wilden (US 5242523).

Regarding claim 5, Dean teaches stiffeners 42 being arranged at linear intervals on a portion of the inner skin that forms the cylindrical portion, stiffeners 54 passing through the intervals and intersecting the stiffeners 42, and curing the assembly while using forming jigs/tools engageable with the skin and stiffeners (Figures 9 and 27; p. 16, lines 15-17; p. 19, lines 32-34; p. 22, lines 11-13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a combination of flexible and rigid jigs/tools in contact with the frames and stringers of Dean during curing of the same because such is known in the art, as taught by Wilden (note rigid pressure bridges and flexible cauls; column 4, lines 60-66; column 6, lines 31-32; column 2, lines 58-59), where this allows for varying pressure application during the curing cycle.

Allowable Subject Matter

12. Upon filing a terminal disclaimer to overcome the obviousness-type double patenting rejections set forth above, claims 1 and 4-6 will be allowed.

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With respect to claim 1, the prior art fails to teach or suggest a method for producing a composite structure having a three-dimensionally curved portion and a cylindrical portion, comprising mounting a honeycomb core on an outer skin and superposing an inner skin thereon, wherein the assembly is formed by heating under pressure while disposing an elastic plate and a press plate on a fin portion where the outer skin and inner skin overlap each other.

JP 57-116635 teaches bonding top and bottom skins to a honeycomb core by inserting projections 6 through the overlapping skin portions and superimposing an elastic plate 4 on top of the projections to prevent slipping of the skins during pressing/bonding of the skins and core (Figure 2; abstract). The reference fails to also teach a press plate on the overlapping portion.

US 6197146 teaches bonding a honeycomb core 8 to a bottom skin 2 by placing elastic plate 10 on the honeycomb core surface and superimposing press plate 18 on the elastic plate, around the periphery of the honeycomb core (Figure 4), so that crushing of the honeycomb core is prevented during pressing/bonding of the core and skin due to the complex contours of the skin (column 3, lines 24-35 and 49-50; column 4, lines 4-7 and 12-13). The reference fails to teach a top skin and therefore fails to teach the elastic and press plates being on a portion where the bottom skin and a top skin overlap.

One of ordinary skill in the art would not have been motivated to modify '635 in view of '146 by replacing the projections 6 with the press plate 18 of '146, or by using the press plate 18 in addition to the pins 6, because '146 only teaches the elastic and press plates being placed on the honeycomb core and not on the bottom skin (especially since '146 teaches no top skin at all).

Response to Arguments

13. Applicant's arguments with respect to claim 8 have been considered but are moot in view of the new ground(s) of rejection.

14. Please note that Applicant's amendment to claim 8 broadened the scope of the claimed invention thereby necessitating the new grounds for rejection, as set forth above using the Lucas and Dean references.

15. On pages 7-8 of the arguments filed 12/4/03, Applicants argue that the stiffeners 42, 54 of Dean do not intersect at junction 58.

First, the examiner would like to point out that this argument does not apply to rejected claim 8, since such an argument is not commensurate with the scope of the claimed invention. However, the examiner would like to point out that Dean expressly states that the stiffeners 42, 54 "meet and cross" at the junctions 58 (Figure 27; p. 20, lines 1-7), wherein the skilled artisan would have appreciated that "cross" can be a synonym for "intersect" (see Webster's Thesaurus) and it is being used as such in the Dean reference.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jessica L. Rossi** whose telephone number is **571-272-1223**. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard D. Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jessica L. Rossi
Patent Examiner
Art Unit 1733



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